ADDITIONS TO THE CHECK-LIST OF THE FISHES OF NEW SOUTH WALES.

(No. 3.)

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(Plate xiv.)

The present paper is a continuation of my last list of additions, which appeared in "The Australian Zoologist," v., 4, 1929, 353-357.

Most of the species added to the New South Wales fish-fauna in recent years have been caught in fairly deep water over the continental shelf. The continued interest of many friends aboard the trawlers and their help in securing specimens for the Australian Museum has been indispensable, and I desire especially to thank Mr. Alec Ward and Captain Knud Moller of the trawlers and Captain L. Comtesse of the dredge "Triton" for the fishes they have submitted to me from time to time. Of the pelagic fishes of the open Pacific and the fishes of the great depths off our coasts, little is as yet known but many new records will, it is hoped, be forthcoming when the fishes of the "Dana" expedition are finally determined.

Family Macroramphosidae.

Macroramphosus molleri, *sp. nov.*

Centriscus gracilis Pedley, Proc. Linn. Soc. N.S. Wales, ix., 1884, 119 (Port Jackson, N.S. Wales). Not *Centriscus gracilis* Lowe, Proc. Zool. Soc., Lond., vii., October, 1839, 86, from Madeira.

Centriscus gracilis var. *japonicus* Ogilby, Cat. Fish. N.S. Wales, 1886, 42 (Port Jackson). Not *Centriscus japonicus* Günther, Cat. Fish. Brit. Mus., iii., 1861, 522, from Japan.

Macrorhamphosus gracilis Waite, Austr. Mus. Mem. iv., 1., December 23, 1899, 61, pl. vii., fig. 2 (Maroubra, N.S. Wales). *Id.* Waite, Rec. Austr. Mus., iii., 1900, 199 (Lord Howe Island).

Macrorhamphosus japonicus ? Regan, Ann. Mag. Nat. Hist. (8), xiii., January, 1914, 19 (N.S. Wales reference only).

Macroramphosus gracilis McCulloch, Austr. Mus. Mem., v., 1., 1929, 83.

The Little Bellows Fish of New South Wales which has been called *Macroramphosus gracilis* by authors is apparently distinct from *Centriscus gracilis* Lowe. The second dorsal spine has few serrations, originates before the vertical from the vent, and, in most specimens when depressed, reaches the second dorsal fin. Nine to twelve dorsal rays, eighteen to nineteen anal; depth, 5—5½ in total length. The New South Wales form, which I name *M. molleri*, is allied to *Centriscus japonicus* Günther, but Regan, who compared Günther's types with Waite's figure was uncertain as to their identity. The holotype of *M. molleri* is the specimen figured by Waite, which came from Maroubra Beach, near Sydney, New South Wales (Austr. Mus., Regd. No. B. 7163). Captain Knud Moller, of the trawler "Durraween," after whom the species is named, collected a specimen seven miles off Twofold Bay, New South Wales, in or over 45 fathoms of water. It has been suggested that the species is pelagic, so that specimens could enter a trawl as it was being hauled through the upper layers of the sea.

NOTOPOGON LILLIEI Regan.

Centriscops humerosus McCulloch, Zool. Res. Endeavour, i., December 22, 1911, 24, pl. v., and text-fig. 9. Sixty miles south of Cape Everard, Victoria; 60-70 fathoms (IA. 1364). Not *Centriscus humerosus* Richardson, 1846, from South Australia.

Notopogon lilliei Regan, Ann. Mag. Nat. Hist. (8), xiii., January 1, 1914, 14. New Zealand. *Idem. ibid.*, 18 and 20 (Southern Australia and New Zealand).

Centriscops cristatus McCulloch, Biol. Res. Endeavour, ii., July 3, 1914, 93. New name, inadvertently introduced, equivalent to *Notopogon lilliei* Regan. New Zealand.

Two specimens trawled in 75 fathoms, 10 miles W.N.W. from Gabo Island, by Captain Moller, cause this species to be added to the New South Wales list.

Family MACROURIDAE.

PARAMACRURUS AUSTRALIS (Richardson).

Lepidoleprus australis Richardson, Proc. Zool. Soc. Lond., vii., November, 1839, 100. Port Arthur, Tasmania. Type in British Museum.

Coelorhynchus mortoni Ogilby, Pap. Proc. Roy. Soc. Tasm., 1896 (1897), 83. Derwent Estuary, Tasmania. Type destroyed.

Coelorhynchus (*Paramacrurus*) *australis* McCulloch, Biol. Res. Endeavour, v., 4, 1926, 177.

Paramacrurus australis Whitley, Pap. Proc. Roy. Soc. Tasm., 1928 (1929), 49.

Mr. Alec Ward obtained several examples of this species in deep water, south of Montague Island, in August and September, 1929. The largest is a female, 22 inches long, a record size. Austr. Mus., Nos. IA. 4008 and 4010. New record for New South Wales.

Family PLECTORHINCHIDAE.

PLECTORHINCHUS ROUGHLEYI, *sp. nov.*

Plectorhynchus reticulatus McCulloch, Biol. Res. Endeavour, iv., 4, October 31, 1916, 185, pl. liii. New South Wales. *Idem.* Ogilby, Mem. Q'ld. Mus., vi., 1918, 100 (Moreton Bay). *Id.* Paradice and Whitley, Mem. Q'ld Mus., ix., 1927, 87 (Pellew Islands, North Australia). Not *Diagramma reticulatum* Günther, Cat. Fish. Brit. Mus., i., 1859, 334, from China.

Plectorhinchus reticulatus McCulloch, Austr. Zool., ii., 2, 1921, 57, and Austr. Mus. Mem., v., 1929, 217.

Diagramma amabile and *D. amicium* Saville-Kent, Great Barrier Reef, Austr., 1893, 369. *Nomina nuda.* Queensland.

The New South Wales specimen described by McCulloch appears to differ from the true *P. reticulatus* (Günther) in having l.lat. 55 instead of 85, 10 rows of scales between l.lat. and back instead of 13, second anal spine longer than third, diameter of eye sub-equal to snout, more anterior termination of dorsal fin, with shorter caudal peduncle and caudal fin. McCulloch's specimen was secured in the Sydney Fish Markets, and probably originally came from northern New South Wales. It may be regarded as the holotype of a new species, in view of the differences mentioned above, and I have pleasure in naming it *Plectorhinchus roughleyi* after my friend, Mr. Theodore Cleveland Roughley, of the Technological Museum, Sydney, author of "Fishes of Australia and Their Technology."

Family EPINEPHELIDAE.

Genus EPINEPHELUS Bloch.

Epinephelus Bloch, Nat. ausl. Fische, vii., 1793, 11 (*fide* Sherborn, Index Anim., i., 1902, 330). Logotype, *E. marginalis* Bloch, by opinion (Smithson. Misc. Coll., lxxiii., 4, 1926, 7, opin., 93). Not *Epinephele* Hübner, 1818, a genus of *Lepidoptera* (NYMPHALIDAE).

Schistorus Gill, Proc. Acad. Sci. Philad., 1862, 236 and 237. Haplotype, *Serranus mystacinus* Poey.

EPINEPHELUS (SCHISTORUS) ERGASTULARIUS, *sp. nov.*

(Plate xiv., fig. 1.)

Plectropoma susuki Günther, Proc. Zool. Soc. Lond., 1867, 100. Sydney. *Idem.* Ogilby, Cat. Fish. N.S. Wales, 1886, 9. Not *P. susuki* Cuv. and Val., 1828.

Epinephelus septemfasciatus Boulenger, Cat. Perc. Fish. Brit. Mus., 1895, 169 and 226 (Port Jackson specimen only). *Idem.* Waite, Austr. Mus. Mem., iv., 1., 1899, 75 (Shoalhaven Bight). *Idem.* McCulloch, Zool. Res. Endeavour, i., 1911, 49; Austr. Zoologist, ii., 2, 1921, 46; Check-list Fish. N.S. Wales, 1922, 46; Austr. Mus. Mem., v., 2, 1929, 146. Not *Perca septemfasciata* Thunberg, 1793.

Epinephelus (*Schistorus*) *septemfasciatus* Jordan and Richardson, Proc. U.S. Nat. Mus., xxxvii., 1910, 445 and 458 (Australian references only).

Br. 5. D.xi./14; A.iii./10 (9); P.17, V.i./5; C.13.

Head (75 mm.) 2.4 in length to hypural joint (180). Depth (67) 2.6 in same. Pectoral (40) 1.6, height of soft dorsal (28) 2.7, depth of caudal peduncle (23) 3.2 and width at opercles (31) 2.4 in head. Sub-orbital (7) 2 in eye (14). Inter-orbital width (16) equal to snout (16).

Head large, compressed, longer than high, and covered with small scales, excepting before the eyes and on the mouth, chin and inter-orbital. Nostrils anterior to the eyes, the posterior much larger than the anterior. Mouth large, maxillary broad, reaching to below posterior half of eye, naked, and with a supplemental bone. A strip of small, sharp, curved teeth in each jaw, those of the mandible in two main series on each side. A pair of small anterior canines in each jaw. A broad, V-shaped patch of teeth on vomer, and a narrow band on each palatine. Tongue lanceolate, toothless. Preopercular margin serrated, with about nine stronger serrations at the angle. Three opercular spines, the median one largest and situated nearer the lowest spine than the highest. Border of opercular flap curved convexly above, concavely below.

Body compressed, covered with small ctenoid scales, which extend on to the basal halves of the fins. Lateral line sub-parallel to the curve of the back and extending along the tail.

Dorsal originating slightly behind the vertical of the origins of the paired fins and terminating behind the anal. Third to sixth dorsal spines longest, sub-equal. Margins of soft fins rounded.

General colour greyish, crossed by seven transverse dark brown bands of sub-equal width; the anterior bands are more oblique than the posterior and there is an incipient eighth band on the nape. The unpaired fins are brownish, slightly lighter inframarginally. Ventrals dark brown. Pectorals light. A very dark brown saddle-shaped mark on the upper half only of the caudal peduncle. Head brown, with an oblique dark brown mark along the edge of the maxillary groove, and a dusky tinge on the opercular flap.

Described from the holotype of *Epinephelus ergastularius,* a specimen 180 mm. in standard length or nearly 9½ inches in total length. Australian Museum. Registered No. 1A. 2482.

Type locality: Off Long Bay, coast near Sydney, New South Wales; caught on hook and line in July, 1925, by Mr. G. Wakeford, in about fifty feet of water, over a sandy bottom.

Other specimens are in the Australian Museum from the following localities in New South Wales: Shoalhaven Bight; about 15 fathoms ("Thetis"). Off Wooded Bluff, Clarence River; 26-30 fathoms ("Endeavour"). Between Port Hacking and Wollongong; 50-70 fathoms, July 28, 1915 (A. R. McCulloch). Off Long Bay, August 18, 1929 (S. Silk). My friend, Mr. F. A. McNeill, has been instrumental in getting me both Long Bay specimens, and I have much pleasure in recording my indebtedness to him for them. This species apparently lives in the sub-littoral zone below the lowest tide-marks, and in water either too rocky or not deep enough for commercial trawling purposes, and, like all the animals of that area, is difficult to secure, and is accordingly popularly regarded as rare.

Affinities: *Epinephelus ergastularius* is apparently closely allied to the Japanese *Perca septemfasciata* Thunberg (1), of which *Plectropoma susuki* Cuvier and Valenciennes (2), and *Serranus octocinctus* Temminck and Schlegel (3) are synonyms. It appears to differ, however, in having more anal rays, anterior transverse bands broader, and saddle-shaped mark restricted to upper part of caudal peduncle. The lower jaw and the naked maxillary appear to be shorter, and the eye smaller in *E. ergastularius*, when compared with Temminck and Schlegel's figure. The Japanese species has been further described by Steindachner and Doderlein (4), and by Jordan and Richardson (5).

A uniform brownish form of this species, perhaps new, has been recorded from Honolulu by Fowler (6).

Family ALUTERIDAE.

Genus STEPHANOLEPIS Gill.

Stephanolepis Gill, Proc. Acad. Nat. Sci. Philad., 1861, 78. Orthotype, *Monacanthus setifer* Bennett.

Sub-genus PERVAGOR, *nov.*

Orthotype: *Monacanthus alternans* Ogilby.

Head and body covered with spiny scales. No cutaneous filaments. Dorsal spine longer than snout, with two rows of strong spaced barbs posteriorly. None of the fin-rays elongate. Pubic bone ending in a prominent, strongly-barbed pelvic spine, the end of which is movable. Ventral flap a tough membrane, very spinose, not extending beyond pelvic spine. Depth at origin of dorsal and anal fins slightly more than length of head, and more than one-third of the length to the hypural.

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1. Thunberg, Vetensk. Akad. Handl. (Stockholm), xiv., 1793, 56, pl. i. Nagasaki, Japan (*fide* Fowler, 1928).
2. Cuvier and Valenciennes, Hist. Nat. Poiss., ii., October, 1828, 404. Japan.
3. Temminck and Schlegel, Faun. Japonica, Pisces, 1842, 7, pl. iv.a, fig. 2. Japan.
4. Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien., xlvii., 1883, 230.
5. Jordan and Richardson, Proc. U.S. Nat. Mus., xxxvii., 1910, 459.
6. Fowler, Occas. Papers Bern. P. Bishop Mus., viii., 7, 1923, 379; Mem. Bishop Mus., x., 1928, 180.

STEPHANOLEPIS (PERVAGOR) ALTERNANS (Ogilby).

(Plate xiv., fig. 2.)

Monacanthus nitens Waite, Proc. Linn. Soc. N.S. Wales (2), ix., 2, December 10, 1894, 224. Maroubra, New South Wales. Not *M. nitens* Hollard, 1854. *Id.* Waite, Rept. Trawl. Oper. Thetis, 1898, 64 (Lord Howe Is.). *Id.* Ogilby, Abstr. Proc. Linn. Soc. N.S. Wales, November 30, 1898, iii. *Id.* McCulloch, Austr. Zool., ii., 3, 1922, 125.

Monacanthus alternans Ogilby, Proc. Linn. Soc. N.S. Wales, xxiii., 4, May 19, 1899, 741. New name for *M. nitens* Waite (*non* Hollard) from Lord Howe Island and N.S. Wales. Type in Austr. Mus. Type locality, by present designation, Maroubra, New South Wales.

Stephanolepis nitens Waite, Mem. N.S. Wales Nat. Club., i., 1904, 55.

D.ii./30; A.26; P.12; C.12.

Head (13 mm.) 2.7 in length to hypural (36). Depth (14) 2.5 in same or 2 in distance from mouth to end of pelvic spine. Dorsal spine (12) subequal to inter-dorsal space (12.5). Eye (4) equal to inter-orbital width (4), less than pectoral (5). Length of caudal peduncle (3) 2 in its depth (6).

Head and body compressed, covered with scales, each of which has a prominent conical spine. No bristles or enlarged spines on caudal peduncle. Origin of soft dorsal in advance of that of anal. Margins of fins gently rounded, the rays spiny on their proximal halves. Pelvic spine with an anterior, a median, and a posterior group, each of about four barbs, and with a spiny anterior surface.

Colour, after long preservation in alcohol, brown on back and posterior half of body, silvery on cheeks, sides, and ventral flap. Fins whitish.

Described and figured from the lectotype of *Monacanthus alternans* Ogilby, which is the identical specimen described by Waite as *M. nitens* in 1894 (Australian Museum, Registered No. IA. 4019). This is $1\frac{3}{4}$ inches long and agrees fairly well with the original account of *Monacanthus nitens* (Hollard, Ann. Sci. Nat. (4), Zool., ii., 1854, 364, pl. xiv., figs. 12 and 12a) from Tongatabu, but lacks the long spines on the back shown in Hollard's figure. Fowler (Mem. Bish. Mus., x., 1928, 456) regards *M. nitens* as a synonym of *M. melanocephalus* Bleeker (Nat. Tijdschr. Ned. Ind., v., 1853, 95) from Solor, East Indies. I have examined Queensland specimens of the latter species, and find that they are less spiny than *alternans*, and have a black mark around the gill-slits and a chequered caudal, colours which are apparently wanting in both *nitens* and *alternans*.

The only specimen of *Stephanolepis (Pervagor) alternans*, besides the type, which I have seen is unfortunately without locality. It is 55 mm. in total length, the largest known, and has the profile of the head strongly concave, body and head intensely spiny; D.31; A.27. It was presented to the Australian Museum by James Douglas Ogilby in 1901, with a collection of fishes from many seas, and perhaps came from Lord Howe Island (Registered No. I. 4969).

Type locality: Maroubra Beach, New South Wales; collected by Thomas Whitelegge, in May, 1894. The species has not since been found in New South Wales, so the specimen was perhaps a straggler, brought from warmer waters by the southward-flowing Notonectian current.

Waite recorded that he found a specimen in a rock-pool at Lord Howe Island, but neither his nor Ogilby's specimens from that locality are now to be identified with certainty in the Australian Museum.

Family Gobiidae.

When McCulloch and Ogilby wrote their monumental paper (7) on "Some Australian Fishes of the Family Gobiidae," they realised the necessity for sub-dividing the cumbersome larger genera such as *Gobius*, but did not desire to "create unnecessary additions to the already long list of Gobioid genera." Nevertheless, it seems necessary to propose new generic names for many of the Australian forms, as confusion is only maintained by calling widely different fishes "*Gobius*," when they are obviously not congeneric. Moreover, it appears to be safer to provide new genera for gobies than for many groups of fishes as they are for the most part restricted to shore localities, they have easily distinguished characters, and analysis of the genera that have so far been named shows a paucity of synonyms. As a preliminary, I therefore propose the following new generic names, with their respective genotypes, for some Australian gobies and believe that by adopting this course, future work on the group will be rendered easier. The generic characters are given in McCulloch and Ogilby's key.

Favonigobius, *nov.* Type, *Gobius lateralis* Macleay, Proc. Linn. Soc. N.S. Wales, v., 1881, 602. King George's Sound, West Australia.

Chlamydogobius, *nov.* Type, *Gobius eremius* Zietz, Rept. Horn. Exped., ii., 1896, 180, pl. xvi., fig. 5. Central Australia.

Fusigobius, *nov.* Type, *Gobius neophytus* Günther, Journ. Mus. Godef., iv., 11 (Fische Südsee, v.), 1876, 174, pl. cviii., fig. E. Ponapé, Apia, Huahine, and Tahiti.

Metagobius, *nov.* Type, *Eleotris sclateri* Steindachner, Sitzb. Akad. Wiss. Wien., lxxx., 1, 1880, 157. Society Islands.

Parvigobius, *nov.* Type, *Parvigobius immeritus*, new name for *Gobius flavescens* De Vis, Proc. Linn. Soc. N.S. Wales, ix., 1884, 689. Moreton Bay, Queensland. *Id.* McCulloch and Ogilby, Rec. Austr. Mus., xii., 10, 1919, 224, pl. xxxvi., fig. 3 (type). Preoccupied by *Gobius flavescens* Bloch and Schneider, Syst. Ichth., 1801, 73.

Ostreogobius, *nov.* Type, *Gillichthys australis* Ogilby, Proc. Linn. Soc. N.S. Wales (2), ix., 1894, 367. Jervis Bay, New South Wales.

Arenigobius, *nov.* Type, *Gobius bifrenatus* Kner, Voy. Novara, Zool., i., 1865, 177, pl. vii., fig. 3. Sydney, New South Wales.

A new genus of Gobies, collected by the writer at Gundamaian, National Park, New South Wales, may be diagnosed as follows.

Waiteopsis, *gen. nov.*

Orthotype, Waiteopsis paludis, *gen. et. sp. nov.* Type (1A. 3917) in Australian Museum.

Head depressed, broader than deep. Mouth large, extending backward beyond eye. Tongue not notched. No large canine teeth. Bands of small, simple, curved, close-set, movable teeth in each jaw. Chin and mandible without barbels. Minute papillae in rows on head; no prominent ridges. Cheeks naked; opercles with a few small scales. Top of head and anterior portion of nape naked. Form elongate. Body with fifty or more transverse rows of ctenoid scales. Exposed edge of shoulder girdle smooth.

(7) McCulloch and Ogilby, Rec. Austr. Mus., xii., 10, 1919, 193-291, pls. xxxi.-xxxvii., text-figs. 1-5.

First dorsal with six spines. Soft dorsal and anal separated from caudal. Upper pectoral rays neither free nor silk-like. Ventrals well developed, not cup-shaped and not adnate to belly. Caudal rounded.

A list of the New South Wales Gobies, as given in McCulloch's Check-list and as known under the new names, is set forth hereunder:—

307a. *Mugilogobius devisi* McCulloch and Ogilby = *Mugilogobius stigmaticus* (De Vis).
308a. *Bathygobius krefftii* (Steindachner).
309a. *Gobius australis* = *Ostreogobius australis* (Ogilby).
309b. *Gobius lidwilli* = *Berowra lidwilli* (McCulloch).
309c. *Gobius bifrenatus* = *Arenigobius bifrenatus* (Kner).
309d. *Gobius semifrenatus* = *Arenigobius semifrenatus* (Macleay).
309e. *Gobius frenatus* = *Arenigobius frenatus* (Günther).
309f. *Gobius lateralis obliquus* = *Favonigobius obliquus* (McCulloch and Ogilby).
310a. *Cryptocentrus gobioides* (Ogilby) = *Cryptocentrus cristatus* (Macleay).
311a. *Callogobius hasseltii mucosus* = *Callogobius mucosus* (Günther).
312a. *Leme purpurascens* De Vis.

To these may be added:—

388a. *Gunnamatta insolita* Whitley.
393a. *Waiteopsis paludis* Whitley.

I may remark here that *Gobius maculatus* Castelnau (Vict. Offic. Rec. Philad. Exhib., 1875, 20), from Queensland, is apparently a synonym of *G. ornatus* Rüppell. In any case, the name is preoccupied by *G. maculatus* Nardo (Isis, xx., 6, June, 1827, 478.—*fide* Sherborn).

The European gobioid genus, *Eichwaldia* Smitt. (Ofv. Vet. Ak. Forh., 1899, 545—*fide* Jordan, Gen. Fish., iv., 1920, 487) is preoccupied by *Eichwaldia* Billings (Geol. Surv. Canada, Rept. Progr. for 1857, publ. 1858, 190; Canad. Nat. Geol., iii., 1858, 442), a genus of fossil brachiopoda and requires a new name, *Eichwaldiella*.

Butigobius, *nov.* Type, *Lebistes scorpioides* Smitt. Replaces *Lebistes* Smitt. (Ofv. Vet. Ak. Forh., 1899, 543) preoccupied by *Lebistes filippi* (Arch. Zool. Anat. Fisiol., i., 1862, 69; *fide* Jordan, Gen. Fish.).

Cingulogobius Herre (Philip. Bur. Sci. Monogr., xxiii., September, 1927, 88 and 201) is an absolute synonym of *Pleurogobius* Seale (Philip. Journ. Sci., A., iv., November, 1909, 536), with *Pleurogobius boulengeri* Seale, as genotype.

Galera Herre (*loc. cit.*, 87 and 103) is preoccupied by *Galera* Gray (Syn. Cont. Brit. Mus., ed. 44, 1842, 12 and 16), a genus of mammals, and may be renamed *Herrea*, in honour of its founder, with *Galera producta* Herre as orthotype.

The generic name *Priolepis* dates from Cuvier and Valenciennes (Hist. Nat. Poiss., xii., March, 1837, 67) who quote it from an evidently unpublished figure in the manuscripts of Ehrenberg. The haplotype is *P. mica* (Ehrenberg) Cuv. and Val., the Red Sea form of the Pacific *Gobius semidoliatus* Cuv. and Val. Thus *Priolepis* replaces *Zonogobius* Bleeker (Arch. Nèerl. Sci. Nat., ix., 1874, 323) whose genotype, *Gobius semifasciatus* Bleeker, is said to be a synonym of *G. semidoliatus*.